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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/618,410
Filing Date: July 11, 2003
Appellant(s): DETTINGER ET AL.

Gero G. McClellan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07/05/2007 appealing from the Office action mailed 3/19/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on 5/18/2007 has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2004/0117359	Snodgrass	6-2004
6,366,915	Rubert	4-2002
5,212,788	Lomet	5-1993

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4-7, 10-12, 15-17, 20, 23-26, 29-31, 34-36, and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Snodgrass et al**. (U.S. PG Pub No. 2004/0117359), in view of **Rubert et al**. (**Rubert** hereinafter) (US Patent No. 6,366,915).

With respect to claim 1, **Snodgrass** teaches **a computer implemented method for managing query execution in a data processing system, comprising:**

"providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system" as a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. Next, the optimizer considers in more detail each of these plans. For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. This way, one best physical query execution plan, where all operations are specified by algorithms, is found for each original candidate plan (**Snodgrass** Paragraph 0028). Therefore one of the best plan/schedule is being chosen for the execution of a query.

"wherein at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying specific queries" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016). **"and a timeframe available for executing the specific queries"** as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

"receiving a query against the database" as a user application layer for interaction between the user and said database-based application for entering queries, a middleware layer overlying a Database Management System (DBMS) and said middleware layer being intended for processing temporal queries from the user, a Database Management System (DBMS) layer for processing queries and for accessing data in a database (**Snodgrass** Paragraph 0015).

"determining that the received query satisfies at least a portion of the query eligibility criteria of the at least one query execution schedule" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (Snodgrass Paragraph 0016).

"scheduling a time to execute the received query on the basis of the at least one query execution schedule" as a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. Next, the optimizer considers in more detail each of these plans. For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. This way, one best physical query execution plan, where all operations are specified by algorithms, is found for each original candidate plan (**Snodgrass** Paragraph 0028). Therefore one of the best plan/schedule is being chosen for the execution of a query.

Snodgrass teaches the elements of claim 1 as noted above but does not explicitly teaches, **"scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule."**

However, **Rubert** discloses **"scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information

from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Claims 20, 39, and 42 are essentially the same as claim 1 except they set forth the claimed invention as a computer readable medium containing a program, a system and a data structure and are rejected for the same reasons as applied hereinabove.

With respect to claim 4, **Snodgrass** teaches t**he method of claim 3, wherein the query eligibility criteria comprise at least one of:**

"an estimated amount of resources required for execution of the specific queries" as the cost effective query plans can be chosen, avoiding that query plans demanding large resources compared to other plans are chosen. The resources could comprise the IO resources and CPU resources (**Snodgrass** Paragraph 0017).

an availability of data sources accessed by the specific queries

"a user submitting the specific queries

and an application submitting the specific queries" as a user application layer for interaction between the user and said database-based application for entering queries, a middleware layer overlying a Database Management System (DBMS) and said middleware layer being intended for processing temporal queries from the user, a Database Management System (DBMS) layer for processing queries and for accessing data in a database (**Snodgrass** Paragraph 0015). Therefore a user and an application are submitting the queries together.

Claims 10, 16, 23, 29, and 35 are same as claim 4 except claims 23, 29 and 35 set forth the claimed invention as a computer readable medium containing a program and are rejected for the same reasons as applied hereinabove.

With respect to claim 5, **Snodgrass** teaches **"the method of claim 1, wherein the at least one query execution schedule is statically defined by a human operator"** as generating a number of query plans according to queries having been entered by the user by means of said user application layer, each said query plan specifying combinations of operations to be performed and establishing whether the operation should be performed in the middleware layer or the DBMS layer (**Snodgrass** Paragraph 0016). Therefore the operations to be performed are specified by the user in the queries.

Snodgrass teaches the elements of claim 5 as noted above but does not explicitly teaches, **"query execution schedule."**

However, **Rubert** discloses **"query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's**

teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Claims 11, 24, and 30 are same as claim 5 except claims 24 and 30 set forth the claimed invention as a computer readable medium containing a program and are rejected for the same reasons as applied hereinabove.

With respect to claim 6, **Snodgrass** teaches **"the method of claim 1, wherein the at least one query execution schedule is dynamically defined by the data processing system on the basis of monitored system parameters"** as FIG. 2 describes the main function of the Execution Engine, which receives an execution-ready plan consisting of a sequence of algorithms with their parameters and arguments (**Snodgrass** Paragraph 0032).

Snodgrass teaches the elements of claim 6 as noted above but does not explicitly teaches, **"query execution schedule."**

However, **Rubert** discloses **"query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Claims 12, 25, and 31 are same as claim 6 except claims 25 and 31 set forth the claimed invention as a computer readable medium containing a program and are rejected for the same reasons as applied hereinabove.

With respect to claim 7, **Snodgrass** teaches **a computer-implemented method for scheduling execution of a query against a database in a data processing system, comprising:**

"providing a plurality of query execution schedules" as a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. Next, the optimizer considers in more detail each of these plans. For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. This way, one best physical query execution plan, where all operations are specified by algorithms, is found for each original candidate plan (**Snodgrass** Paragraph 0028). Therefore one of the best plan/schedule is being

chosen for the execution of a query. **"each query execution schedule defining query eligibility criteria identifying specific queries"** as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016). **"and a timeframe available for executing the specific queries"** as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

"receiving a query against the database" as a user application layer for interaction between the user and said database-based application for entering queries, a middleware layer overlying a Database Management System (DBMS) and said middleware layer being intended for processing temporal queries from the user, a Database Management System (DBMS) layer for processing queries and for accessing data in a database (Snodgrass Paragraph 0015).

"determining, for the received query, a suitable query execution schedule on the basis of the query eligibility criteria of the plurality of query execution schedules" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016).

"scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule" as

means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

Snodgrass teaches the elements of claim 7 as noted above but does not explicitly teach, **"scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule."**

However, **Rubert** discloses **"scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Claims 26 and 40 are essentially the same as claim 7 except they set forth the claimed invention as a computer readable medium containing a program and a system and are rejected for the same reasons as applied hereinabove.

With respect to claim 15, **Snodgrass** teaches **a computer implemented method of providing a query execution schedule for scheduling execution of specific queries against a database in a data processing system, comprising:**

"defining query eligibility criteria identifying the specific queries to be scheduled by the query execution schedule" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016).

"defining a timeframe available for executing the specific queries" as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

"associating the query eligibility criteria and the timeframe with the query execution schedule" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016). Means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by

using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020). They are both associated with the query plan/schedule.

"scheduling times to execute the specific queries against the data processing system on the basis of the query eligibility criteria and the timeframe associated with the query execution schedule" as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020). Means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016).

Snodgrass teaches the elements of claim 15 as noted above but does not explicitly teaches **"scheduling times to execute the specific queries against the data processing system on the basis of the timeframe and the query execution schedule."**

However, **Rubert** discloses **"scheduling times to execute the specific queries against the data processing system on the basis of the timeframe and the query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate

at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Claims 34, and 41 are essentially the same as claim 15 except they set forth the claimed invention as a computer readable medium containing a program, and a system and are rejected for the same reasons as applied hereinabove.

With respect to claim 17, **the method of claim 15, further comprising:** **"monitoring system parameters of the data processing system"** as FIG. 2 describes the main function of the Execution Engine, which receives an execution-ready plan consisting of a sequence of algorithms with their parameters and arguments (**Snodgrass** Paragraph 0032).

wherein the defining of the query eligibility criteria and the timeframe comprises:

"dynamically defining the query eligibility criteria" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass**

Paragraph 0016). **"and the timeframe"** as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020). **"on the basis of the monitored system parameters"** as FIG. 2 describes the main function of the Execution Engine, which receives an execution-ready plan consisting of a sequence of algorithms with their parameters and arguments (**Snodgrass** Paragraph 0032).

Claim 36 is essentially the same as claim 17 except it sets forth the claimed invention as a computer readable medium containing a program and is rejected for the same reasons as applied hereinabove.

1. Claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Snodgrass et al**. (U.S. PG Pub No. 2004/0117359), in view of **Rubert et al**. (**Rubert** hereinafter) (US Patent No. 6,366,915) as applied to claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 above further in view of **Lomet et al**. (**Lomet** hereinafter) (US Patent No. 5,212,788).

With respect to claim 8, **Snodgrass** teaches **the method of claim 7, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:**

"timeframes of the plurality of suitable query execution schedules" as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

"scheduling execution of the received query against the database" as a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. Next, the optimizer considers in more detail each of these plans. For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. This way, one best physical query execution plan, where all operations are specified by algorithms, is found for each original candidate plan (**Snodgrass** Paragraph 0028). Therefore one of the best plan/schedule is being chosen for the execution of a query.

Snodgrass teaches the elements of claim 8 as noted above but does not explicitly teaches, **"query execution schedule."**

However, **Rubert** discloses **"query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Snodgrass and Rubert teach the elements of claim 8 as noted above but do not explicitly disclose the step of **"determining an intersection."**

However, **Lomet** discloses **"determining an intersection"** as a transaction time is selected from the intersection of the voted time ranges and is used to timestamp all updated data that is durably stored when the transaction is committed (**Lomet** Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Lomet's** teaching would have allowed **Snodgrass and Rubert** to facilitate determining the overlap in time of different timeframes, without hurting the system's performance and also providing a delay lock mechanism (**Lomet** Col 1, Lines 50-58).

Claim 27 is essentially the same as claim 8 except it sets forth the claimed invention as a computer readable medium containing a program and is rejected for the same reasons as applied hereinabove.

With respect to claim 9, **Snodgrass** does not explicitly teach **"the method of claim 7, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:**

determining an intersection of the timeframes of the plurality of suitable query execution schedules

determining whether the intersection is empty or not

if the intersection is not empty, scheduling execution of the received query against the database on the basis of the determined intersection

if the intersection is empty, notifying a user."

However, **Rubert** discloses **"query execution schedule"** as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Snodgrass and Rubert teach elements of claim 9 as noted above but do not explicitly teach the **"determining an intersection of the timeframes of the plurality of suitable query execution schedules**

determining whether the intersection is empty or not

if the intersection is not empty, scheduling execution of the received query against the database on the basis of the determined intersection

if the intersection is empty, notifying a user."

However, **Lomet** discloses **the method of claim 7, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:**

"determining an intersection of the timeframes of the plurality of suitable query execution schedules" as a transaction time is selected from the intersection of the voted time ranges and is used to timestamp all updated data that is durably stored when the transaction is committed (**Lomet** Abstract).

"determining whether the intersection is empty or not

if the intersection is not empty, scheduling execution of the received query against the database on the basis of the determined intersection" as if all the cohorts to a transaction vote to commit the transaction and the intersection of the voted time ranges is not empty, then the transaction is committed during the second phase of the protocol. Also a transaction time is selected from the intersection of the voted time ranges, and this selected transaction time is used to timestamp all updated data that is durably stored when the transaction is committed (**Lomet** Col 2 Lines 7-14). In these lines if the intersection time is not empty then the required operation is being performed.

"if the intersection is empty, notifying a user" if timestamp ranges voted by the cohorts to a transaction are not sufficiently large, the probability that their

intersection is empty, forcing the transaction to abort, increases (**Lomet** Col 9, Lines 16-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Lomet's** teaching would have allowed **Snodgrass and Rubert** to facilitate determining the overlap in time of different timeframes, without hurting the system's performance and also providing a delay lock mechanism (**Lomet** Col 1, Lines 50-58).

Claim 28 is essentially the same as claim 9 except it sets forth the claimed invention as a computer readable medium containing a program and is rejected for the same reasons as applied hereinabove.

With respect to claim 13, **Snodgrass** does not explicitly teach **the method of claim 12, wherein the monitored system parameters comprise at least one of:**

a peak query workload time period

a light query workload time period

a time pattern indicating availability of the database.

However, **Lomet** discloses **the method of claim 12, wherein the monitored system parameters comprise at least one of:**

a peak query workload time period

a light query workload time period

"a time pattern indicating availability of the database" as a multiversion database is one, which can be queried (i.e., asked or interrogated) as to what the state of the database was at a specified time. In such multiversion databases, also called temporal databases, all updated data is "stamped" with a time value, usually with a time value corresponding to the time at which the data was updated. With the appropriate support (i.e., software), a query of the timestamped database can provide a transaction consistent view of the database, as it existed at a specified time (**Lomet** Col 1, Lines 13-24). Therefore a specific time/time pattern indicate the availability/existence of a database.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Lomet's** teaching would have allowed **Snodgrass and Rubert** to enhance the performance of the system by using the delay lock mechanism (**Lomet** Col 2, Lines 40-46), which keeps the record of state of database (availability of database) at specified times.

Claims 18, 32, and 37 are same as claim 13 except claims 32 and 37 set forth the claimed invention as a computer readable medium containing a program ands are rejected for the same reasons as applied hereinabove.

With respect to claim 14, **Snodgrass** does not explicitly teach **"the method of claim 13, wherein the database includes distributed data sources and wherein a**

separate time pattern is provided for each distributed data source, the separate time pattern indicating availability of a corresponding distributed data source."

However, **Lomet** discloses **"the method of claim 13, wherein the database includes distributed data sources and wherein a separate time pattern is provided for each distributed data source, the separate time pattern indicating availability of a corresponding distributed data source"** as a multiversion database is one, which can be queried (i.e., asked or interrogated) as to what the state of the database was at a specified time. In such multiversion databases, also called temporal databases, all updated data is "stamped" with a time value, usually with a time value corresponding to the time at which the data was updated. With the appropriate support (i.e., software), a query of the timestamped database can provide a transaction consistent view of the database, as it existed at a specified time (**Lomet** Col 1, Lines 13-24). Therefore a specific time/time pattern indicate the availability/existence of a database.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Lomet's** teaching would have allowed **Snodgrass and Rubert** to enhance the performance of the system by using the delay lock mechanism (**Lomet** Col 2, Lines 40-46), which keeps the record of state of database (availability of database) at specified times.

Claims 19, 33, and 38 are same as claim 14 except claims 33 and 38 set forth the claimed invention as a computer readable medium containing a program ands are rejected for the same reasons as applied hereinabove.

(10) Response to Argument

A. <u>35 U.S.C. § 101 rejection of claims 1-41.</u>

In view of the arguments in Appeal Brief filed on 7/05/2007, the 101 rejections have been withdrawn.

B. <u>§ 103(a) rejection of claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 over Snodgrass in view of Rubert.</u>

Appellant argues that **Snograss** does not teach **"providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system, wherein at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries"** as recited in independent claims 1, 7, 15, 20, 26, 34, 39, 40, 41, and 42.

In response to the preceding arguments examiner respectfully submits that **Snodgrass** teaches **"providing at least one query execution schedule configured**

to schedule specific queries against a database in the data processing system" as a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. Next, the optimizer considers in more detail each of these plans. For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. This way, one best physical query execution plan, where all operations are specified by algorithms, is found for each original candidate plan (**Snodgrass** Paragraph 0028).

"wherein at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying specific queries" as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016). **"and a timeframe available for executing the specific queries"** as means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020).

Paragraphs 0028 and 0016 show that one of the best plans is being chosen for the execution of the queries. These plans are selected based on a criterion, which estimates the cost in processing resources for each query plan.

Appellant argues that *examiner concludes that an access plan and the claimed scheduling of a query are same*.

Examiner respectfully submits that **Snodgrass** teaches a query execution plan, which executes these queries and these execution plans inherently have to have a time to execute.

The Translator-To-SQL component translates those parts of the chosen plan that occur in the DBMS into SQL and passes the execution-ready plan to the Execution Engine, which executes the plan (**Snodgrass** Paragraph 0029).

Further, Snodgrass teaches in paragraphs 0018-0020 that the queries being executed are temporal queries. Temporal is being defined as "relating to the sequence of time or to a particular time" as defined by Merriam-Webster dictionary. Therefore, there is time being defined in the query.

Further, examiner combined **Rubert** reference to teach the aspect of scheduling as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

Further, figure 4 of Rubert shows the scheduling of queries.

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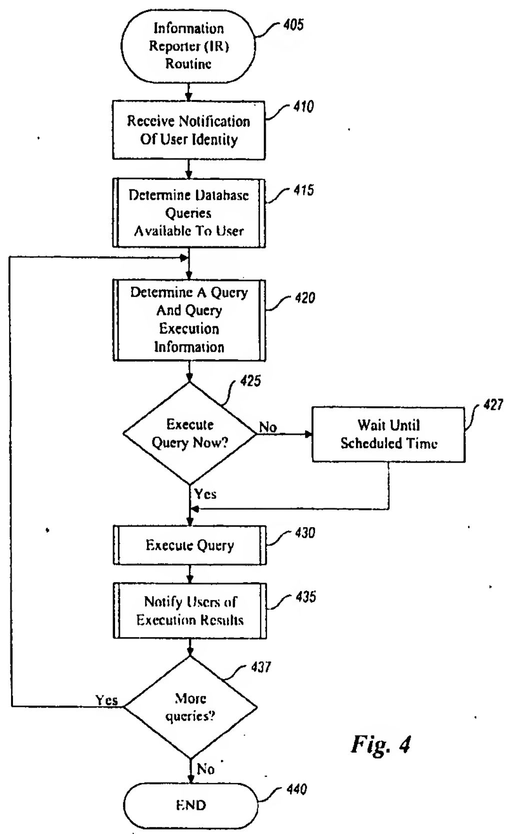

Fig. 4

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Therefore, the combination of the query execution plan of the Snodgrass and the scheduler for executing the queries of Hubert provides the desired results of the claimed invention.

Appellant argues that the *criterion in Snodgrass does not identify the query*.

Examiner respectfully submits that the criteria described by Snodgrass is same as the one described by the Appellant in dependent claim 4. Snodgrass is avoiding the query plan demanding large resources compared to other plans (**Snodgrass** Paragraph 0017). Therefore, the criterion defines a plan and the criteria in the plans identify the specific queries, which are to be executed by a specific plan.

Further, Appellant argues that **Snodgrass** is *choosing a plan for a single query instead of queries (plural)*.

Examiner respectfully that Snodgrass teaches, when used without histograms, the optimizer returned the second plan for the six queries with the time-period end varying from Jan. 1, 1984 to Jan. 1, 1989, and the first plan for all other queries (**Snodgrass** Paragraph 0136). Therefore, different plans are being assigned to plurality of different queries.

Further, figure 4 of Rubert shows the multiple queries being executed according to a schedule.

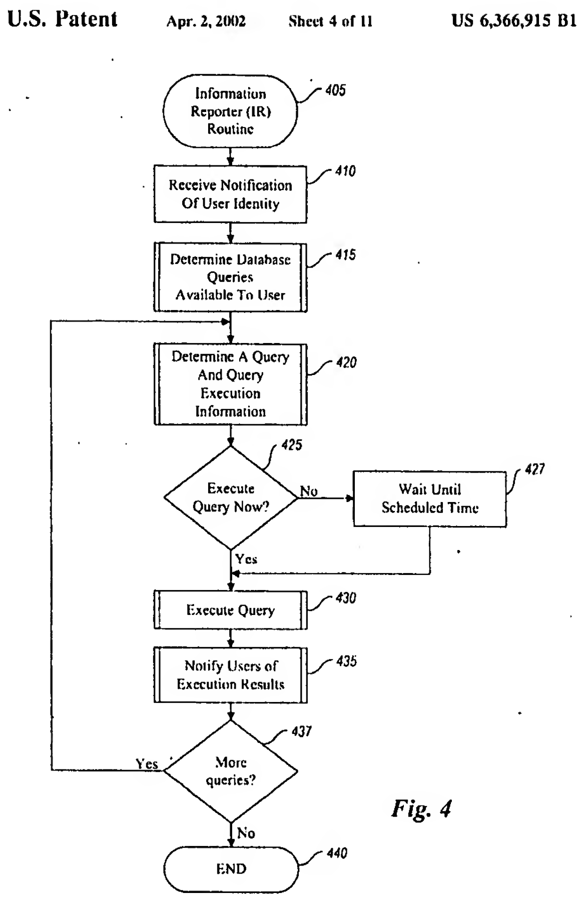

Fig. 4

Appellant further argues that in **Rubert** there is no predefined query execution schedule that define a timeframe for one or more queries.

In response examiner respectfully submits that Snodgrass teaches **"predefined execution schedule"** as means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means (**Snodgrass** Paragraph 0016) and means for estimating the cost in processing resources according to each said query plan by estimating the selectivity

of a temporal selection, said estimate of the selectivity intended for being performed by using the information that an end time of a period never precedes a start time of the period (**Snodgrass** Paragraph 0020). Examiner interprets the predefined execution plans as the predefined execution schedules.

Further, examiner combined **Rubert** reference to teach the aspect of scheduling as the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution (**Rubert** Col 4, Lines 2-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Rubert's** teaching would have allowed **Snodgrass** to provide an efficient retrieval of information from one of several databases and to provide efficient query execution by automatically performing the query execution and notifying the user of the query results.

Therefore, the combination of the query execution plan of the Snodgrass and the scheduler for executing the queries of Hubert provides the desired results of the claimed invention.

Appellant's arguments directed towards the rejections of dependent claim 4-6, 10-12, 16-17, 23-25, 29-31 and 35-36 reiterate deficiencies Appellant made in the rejection of the independent claims 1, 7, 15, 20, 26, 34, 39, 40, 41, and 42 and do not address any new points. Therefore examiner submits that if the rejection of the

independent claims is deemed proper, the rejection of claims 4-6, 10-12, 16-17, 23-25, 29-31 and 35-36 should also be upheld.

C. § 103(a) rejection of claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 over over Snodgrass in view of Rubert further in view of Lomet.

Appellant's arguments directed towards the rejections of claim 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 reiterate deficiencies Appellant made in the rejection of the independent claims 1, 7, 15, 20, 26, 34, 39, 40, 41, and 42 and do not address any new points. Therefore examiner submits that if the rejection of the independent claims is deemed proper, the rejection of claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 should also be upheld.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Usmaan Saeed

Examiner

Conferees:

Hosain Alam

Supervisory Patent Examiner

Pierre Vital

Supervisory Patent Examiner